REMARKS

In response to the Action dated March 12, 2003, applicant petitions for a one month extension of time to reply to the outstanding action, thereby extending the due date until July 12, 2003. The extension fee of $55.00 is enclosed.

Since the Examiner has indicated that claim 19 and 20 would be considered allowable if written in independent form, applicant has amended claim 19 to be independent, with claim 20 depending from claim 19.

Regarding claims 4 and 12, applicant has amended same, replacing the listed salts with the following: sodium xylene sulfonate, potassium xylene sulfonate, zinc xylene sulfonate, ammonium xylene sulfonate, magnesium xylene sulfonate, sodium toluene sulfonate, potassium toluene sulfonate zinc toluene sulfonate, ammonium toluene sulfonate, magnesium toluene sulfonate, NaCl and KCl. Support for this amendment may be found at page 4, lines 5-10 of the description.

Claim 10 has been amended to correct the typographical error of "cub" to read "cubic".

Concerning the refusal of claims 21 and 22 as being anticipated by Thomas (U.S. Patent No. 5,591,701), applicant respectfully traverses the refusal and requests reconsideration thereof. Thomas teaches a composition for the removal of particulates from a wellbore, comprising the mixture of an anionic surfactant and an amphoteric foaming agent in a molor ratio of 0.6:1 to about 1.4:1. The composition is used to generate a foam having a pH of at least 9.5, and the foam is collapsed by adding acid to reduce the pH below 4.

The composition may also be used to generate a foam having a pH of 3.5 or less, with the addition of caustic causing the foam to collapse at a pH of 9.5. However, in this situation, the surfactant is cationic rather than anionic.

Claims 21 and 22 relate to a <u>fracturing</u> fluid comprising an amphoteric surfactant, a water soluble or dispersible anionic organic or inorganic salt, and an acid. These are not the components disclosed or taught by Thomas' composition for "removal of particulates". Thomas discloses an

anionic salt that is not stated to be a surfactant and further the acid is not a component of Thomas' composition, but is added as a follow-up to collapse the foam.

The present invention teaches that the gelled fracturing fluid has a pH of less than 3.5, and when pH is increased above 6.5, the gel breaks (see Figure 1). Thus, the fluid as claimed in claims 21 and 22 is different from Thomas' composition that gels at a high pH and collapses at a low pH. Although Thomas does teach the possibility of a composition that gels at a low pH and collapses at a high pH, the composition in that case includes a cationic surfactant and an amphoteric foamer and is therefore completely different from the fluid of the present invention.

Thomas' teachings are limited to compositions having a molar ratio of anionic surfactant to amphoteric foamer of 0.6:1 to 1.4:1; Thomas does not suggest the possibility of fluids having ratios outside this range. By contrast, the present invention contemplates ratios outside this range, as set out at page 4, lines 20-25.

Finally, the present invention is directed to a viscoelastic fluid that is able to carry proppant materials into the formation for the purpose of fracturing. Thomas does not teach or suggest a composition that has viscoelastic properties. Moreover, Thomas' composition is intended for use in drilling or cleanout operations.

In view of the differences in fluid composition, pH, viscoelastic properties, and application, it is respectfully submitted that the present invention as set forth in claims 21 and 22 is not anticipated by Thomas.

Second, the Examiner has rejected claims 4, 6, 7, 11, 12, 14, 15 and 21 as being anticipated by U.S. Patent No. 6,482,866 to Dahayanake, and has also rejected claims 1, 3, 6-11 and 14-18 as being unpatentable over Dahayanake.

Dahayanake teaches a viscoelastic surfactant fluid system comprising an amphoteric/zwitterionic surfactant and an inorganic water-soluble salt and/or an organic acid or acid salt.

The Examiner has pointed out that a low molecular weight alcohol may be added, and that the fluid may be foamed using a gas such as air, nitrogen or carbon dioxide.

Claims 1-5, 7-13 and 5-22 of the present invention all refer simply to a low molecular weight solvent, and do not specify that the solvent is an alcohol. Similarly, claims 1-4, 6-12 and 14-22 all refer simply to an acid that may be organic or mineral (see page 4, lines 11-14). Since these claims go beyond the scope of what is taught by Dahayanke, it is respectfully submitted that Dahayanake does not anticipate the present invention.

The Examiner has suggested that it would have been obvious for one of ordinary skill in the art to vary the amount of gas in the foamed fluid to achieve optimal foam properties. However, applicant respectfully submits that this is not the case, since, as taught in the present invention, foaming of the fluid produces unexpected changes in the fluid properties. At page 4, lines 27-28, to page 5, lines 1-2, it is taught that the addition of gas increases the temperature range at which the fluid may be used. Moreover, at page 6, lines 1-18, it is taught that increasing the ratio of gas volume to foam volume to 52-95% that would not have been obvious to one skilled in the art, and therefore the determination of the optimal amount of gas was more than a matter of routine experimentation, but required an inventive step. Applicant therefore submits that claims 16, 17 and 18 are not obvious in view of Dahayanake.

Further, the Examiner has rejected claims 1, 2, 21 and 22 as being anticipated by U.S. Patent Application No. 2002/0033260 to Lungwitz. Applicant encloses a certified copy of the Canadian application upon which the priority claim is

based and as such, this overcomes this rejection. A certified copy of the corresponding Canadian application, filed on August 8, 2000, is enclosed.

Respectfully submitted,

by _____
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July 8, 2003

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Attorney's Docket: A-7519.AMA/lat